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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/825,452	04/02/2001	Michael Mermelstein	12325-002001	1325

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EXAMINER
CHOI, WILLIAM C

ART UNIT	PAPER NUMBER
2873	

DATE MAILED: 08/07/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/825,452	Applicant(s) MERMELSTEIN ET AL.	
	Examiner William C. Choi	Art Unit 2873	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 June 2003* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-34* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *7,8,12,13,18-20 and 23-30* is/are allowed.

6)☒ Claim(s) *1-6,9-11,14-17,21,22 and 32* is/are rejected.

7)☒ Claim(s) *31,33 and 34* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *02 April 2001* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☒ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Oath/Declaration

The oath or declaration is defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application number and filing date is required. See MPEP §§ 602.01 and 602.02.

The oath or declaration, filed on 8/6/2001, is defective because it states "original first and sole inventor" and more than one inventor is named.

Drawings

Figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-6, 9-11, 14-17, 21-22 and 32 are rejected under 35 U.S.C. 102(b) as being anticipated by Inagaki et al.

Regarding claim 1, Inagaki et al discloses a method for spatially modulating radiation (Abstract, Figure 3) comprising: directing at least one radiation beam (column 5, lines 51-53 and column 7, lines 31-41, Figure 3, "L") upon at least one surface acoustic wave diffractive element (column 7, lines 33-36, Figure 3, "38"); and driving at least one of said surface acoustic diffractive elements with a plurality of modulating signals (column 7, line 55 – column 8, line 14, Figure 3, "37") to generate a plurality of independently modulated output radiation beams having parameters (column 7, line 55 – column 8, line 14, Figure 3, "L1", "L2" and "L3").

Regarding claim 2, Inagaki et al further discloses the modulating signals being electrical (column 7, lines 55-56, Figure 3, "37").

Regarding claim 3, Inagaki et al discloses the driving comprising modulating at least one output radiation beam parameter selected from the group consisting of the direction (column 7, lines 36-41, Figure 3), the amplitude, phase, and frequency of the modulated output radiation beams.

Regarding claim 4, Inagaki et al discloses the driving comprising the application of a plurality of separate modulating signals for each surface acoustic wave diffractive element (column 7, lines 55-57).

Regarding claim 5, Inagaki et al discloses at least one of the modulating signals being characterized by a plurality of frequencies (column 7, lines 55-57).

Regarding claim 6, Inagaki et al discloses a laser directing the radiation beam (column 5, lines 51-53 and column 7, lines 31-41).

Regarding claim 9, Inagaki et al discloses the modulated output radiation beams directed upon photosensitive material (column 9, lines 39-54, Figure 5, "8").

Regarding claim 10, Inagaki et al discloses an apparatus for spatially modulating radiation (Abstract, Figure 3) comprising: at least one surface acoustic wave diffractive element (Figure 3, "3"), each element inherently having a surface, at least one transducer of surface acoustic waves (column 7, line 57, Figure 3, "33"), a source of a plurality of modulating signals driving the at least one transducer to transduce a surface acoustic wave in the surface of at least one of said surface acoustic wave diffractive elements (column 7, lines 24-30 and line 55 – column 8, line 14, Figure 3, "37"), a source of at least one input radiation beam constructed and arranged so that at least a portion of the input radiation beam strikes a surface acoustic wave diffractive element from outside the surface of that surface acoustic wave diffractive element (column 7, lines 31-41, Figure 3, "L"), and a plurality of modulated output radiation beams modulated by respective ones of said modulating signals (column 7, lines 43-59, Figure 3, "L1", "L2" and "L3").

Regarding claim 11, Inagaki et al discloses the source of radiation being a laser (column 7, lines 31-33), which would inherently have a cavity.

Regarding claim 14, Inagaki et al discloses at least one surface acoustic wave diffractive element having an active area (column 7, lines 24-30, Figure 1, "32").

Regarding claim 15, Inagaki et al discloses the active area being piezoelectric (column 6, line 66 – column 7, line 8, Figure 1, "32").

Regarding claim 16, said active area of Inagaki et al would inherently have a reflectivity greater than zero, this being reasonably based upon Inagaki et al disclosing the input laser beam being deflected (column 7, lines 31-41).

Regarding claim 17, said active area of Inagaki et al would inherently have a transmissivity greater than zero, this being reasonably based upon the indicated piezoelectric materials (column 7, line 7) having well-known transmissive characteristics as well as Inagaki et al disclosing the transmitted beam "Lo" (Figure 3).

Regarding claims 21 and 22, Inagaki et al discloses the transducer comprising interdigital electrodes (column 7, lines 9-13, Figure 3, "33") deposited on top of a piezoelectric substrate (column 6, line 66 – column 7, line 8, Figure 1, "32") and being regularly spaced (Figure 3, "33").

Regarding claim 32, Inagaki et al discloses wherein said active are comprises at least one thin membrane (column 7, lines 24-30, Figure 1, "32").

Allowable Subject Matter

Claims 7-8, 12-13, 18-20 and 23-30 are allowed.

The following is a statement of reasons for the indication of allowable subject matter: The prior art fails to teach a combination of all the claimed features as presented in claims 7-8: a method for spatially modulating radiation as claimed specifically wherein the radiation beam directing is with a pulsed radiation beam.

The prior art fails to teach a combination of all the claimed features as presented in claims 12-13: an apparatus for spatially modulating radiation as claimed specifically

wherein the surface acoustic wave diffractive elements are positioned inside a laser cavity so as to direct output radiation beams out of the laser cavity.

The prior art fails to teach a combination of all the claimed features as presented in claim 18: an apparatus for spatially modulating radiation as claimed specifically wherein at least one surface acoustic wave diffractive element has a patterned active area.

The prior art fails to teach a combination of all the claimed features as presented in claim 19: an apparatus for spatially modulating radiation as claimed specifically wherein at least one surface acoustic wave diffractive element has an active area on a curved surface.

The prior art fails to teach a combination of all the claimed features as presented in claim 20: an apparatus for spatially modulating radiation as claimed specifically wherein the active area comprises multiple regions with different materials.

The prior art fails to teach a combination of all the claimed features as presented in claim 23: an apparatus for spatially modulating radiation as claimed specifically wherein the transducer comprises interdigital electrodes deposited and irregularly spaced on top of a piezoelectric substrate.

The prior art fails to teach a combination of all the claimed features as presented in claims 24 and 25: an apparatus for spatially modulating radiation as claimed specifically wherein the at least one surface acoustic wave diffractive element includes at least one transducer to create surface acoustic waves in a plurality of active areas

The prior art fails to teach a combination of all the claimed features as presented in claim 26: an apparatus for spatially modulating radiation as claimed specifically wherein the transducer is electrically connected to a second transducer.

The prior art fails to teach a combination of all the claimed features as presented in claim 27: an apparatus for spatially modulating radiation as claimed specifically further comprising at least one second transducer constructed and arranged to transduce acoustic to electrical energy.

The prior art fails to teach a combination of all the claimed features as presented in claims 28 and 29: an apparatus for spatially modulating radiation as claimed specifically further comprising a second surface acoustic wave diffractive element located on the same substrate as the at least one surface acoustic wave diffractive element.

The prior art fails to teach a combination of all the claimed features as presented in claim 30: an apparatus for spatially modulating radiation as claimed specifically wherein the source of modulating signals provides radio frequency electrical signals.

Claims 31, 33 and 34 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: The prior art fails to teach a combination of all the claimed features as presented in claim 31: an apparatus for spatially modulating radiation as claimed

specifically wherein the surface acoustic wave diffractive element has first and second active areas characterized by different mechanical responses.

The prior art fails to teach a combination of all the claimed features as presented in claim 33: an apparatus for spatially modulating radiation as claimed specifically wherein the active area is constructed and arranged to magnify the amplitude of the surface acoustic wave.

The prior art fails to teach a combination of all the claimed features as presented in claim 34: an apparatus for spatially modulating radiation as claimed specifically wherein said surface acoustic waves are flexural waves.

Response to Arguments

Applicant's arguments in regards to claims 1-6, 9-11, 14-17, 21, 22 and 32, filed June 10, 2003 have been fully considered but they are not persuasive. Specifically in regards to applicant's argument on page 13, applicant calls upon information found in the specification, specifically: "The surface acoustic wave diffractive element called for by the claims is exemplified in the first paragraph of the detailed description..." as basis for arguing the examiner's reference. Applicant is reminded that examination of applications is performed on the basis of the limitations set forth in the written claims. In regards to the written claim language, applicant sets forth a "surface acoustic wave diffractive element", whereby the reference (Inagaki et al) does meet. Although element 3 is referred to as an "optical waveguide type acoustooptic element", element 3 does meet the limitation of the claim language whereby said element diffracts by means of

surface acoustic waves. If the difference between the claimed invention and the referenced art is set forth in the specification, applicant is therefore encouraged to incorporate those additional limitations into the claim language in order to clearly differentiate said invention, since by doing so, no new matter would be introduced.

Relevant Prior Art

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Arimoto (U.S. 5,053,619) is being cited herein to show a "surface acoustic wave diffractive element" (column 5, lines 39-48, Figure 10, "20") having the same structural limitations as that of element 3 in Inagaki for further comparison.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to William C. Choi whose telephone number is (703) 305-3100. The examiner can normally be reached on Monday-Friday from about 9:00 am to 6 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Georgia Y. Epps can be reached on (703) 308-4883. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-3431 for regular communications and (703) 305-3432 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

W.C.

William Choi
Patent Examiner
Art Unit 2873
July 29, 2003

Georgia Epps
Supervisory Patent Examiner
Technology Center 2800